

AMENDMENT

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A nano-twin copper material with ultrahigh strength and high electrical conductivity ~~was composed of~~ comprising roughly equiaxed submicron-sized grains, inside each grain, there ~~are high density of growth in~~ twin lamellae with different orientations and high density; and the twin lamellae with the same orientations are inter-parallel; ~~The twin spacing ranges the thickness of the twin lamellae range~~ from several nanometers to 100 nm; and the lengths from 100-500 nm.
2. (Currently amended) The nano-twin copper material with ultrahigh strength and high electrical conductivity according to ~~the claim 1, characterized in that it wherein the nano-twin copper material has, at a temperature of 293 K, a the following properties:~~ density of $8.93 \pm 0.03 \text{ g/cm}^3$, a purity of $99.997 \pm 0.02 \text{ at\%}$, a yield strength of $900 \pm 10 \text{ MPa}$, an ~~and~~ elongation of $13.5 \pm 0.5\%$, a ~~at room temperature at~~ tensile strain rate of $6 \times 10^{-3} \text{ /s}$, an electrical resistivity ~~at room temperature (293 K) of~~ $(1.75 \pm 0.02) \times 10^{-8} \text{ }\Omega\text{-m}$, ~~the and a~~ temperature coefficient of resistivity of $6.78 \times 10^{-11} \text{ K}^{-1}$.
3. (Currently amended) The nano-twin copper material with ultrahigh strength and high electrical conductivity according to ~~the claim 1, characterized in that wherein the said submicron-grain sizes~~ size of the grains range from 300-1000 nm.
4. (Currently amended) A method for producing a nano-twin copper material with ultrahigh strength and high electrical conductivity according to ~~the claim 1, characterized in that which~~ comprises
performing the electrodeposition technique is used, using an electron purity grade CuSO_4 solution having a pH of 0.5-1.5 ~~is selected as electrolyte with the addition of~~ and ion-exchanged water or distilled water as the electrolyte, pH of the said electrolyte is 0.5-1.5, and ~~anode is~~ 99.99%

pure Cu sheet as the anode, and cathode is an iron sheet or a low carbon steel sheet with surface plated by a Ni-P amorphous layer as the cathode; and an additive comprising 0.02-0.2 mL/L gelatine aqueous solution with concentration of 5-25% and 0.2-1.0 mL/L high-purity NaCl aqueous solution with concentration of 5-25%;

The said pulsed with electrodeposition technique parameters comprise: a pulse current density of 40~100 A/cm²; an on-time (t_{on}) of 0.01~0.05s and an off-time (t_{off}) of 1~3s; the a distance of 50~100 mm between the anode and the cathode of 50~100mm, the and an anode to cathode area ratio of 30~50:1 anode and cathode of (30~50):1; and

electromagnetically stirring at a electrolyte temperature of 15~30 °C; electrolyte in electromagnetic stirring; Additive is a combination of 0.02-0.2 mL/L gelatine aqueous solution with concentration of 5-25% and 0.2-1.0 mL/L high-purity NaCl aqueous solution with concentration of 5-25%.